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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/294,259

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MARGULIS

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PA1031US

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EXAMINER

TRAN, T

ART UNIT

PAPER NUMBER

2714

DATE MAILED:

04/26/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

09/294,259

Applicant

NEAL MARGULIS

Examiner

Trang U. Tran

Group Art Unit

2714



☐ Responsive to communication(s) filed on \_\_\_\_\_

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claim

☒ Claim(s) 1-49 is/are pending in the applicat

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-49 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2 and 3

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

2. Claims 1-2, 40, 48 and 49 are rejected under 35 U.S.C. 102(e) as being anticipated by Cooper et al. (US. Patent No. 5,920,688).

In consider claim 1, Cooper et al. disclose all claimed subject matter, note 1) the claimed a display input processor (DIP) configured to receive input images, reconstruct said input images, and responsively generate DIP outputs is met by the modem 87 (Fig. 1, col. 6, lines 28-31), 2) the claimed a display output processor (DOP) configured to process said DIP outputs, and to responsively generate DOP outputs is met by the display adapter 70 (col. 5, lines 27-38), 3) the claimed a buffer memory configured to store said DIP outputs and said DOP outputs, said buffer memory providing display images based on said DOP outputs to said display device is met by the buffer 66 (col. 5, lines 27-38), 4) the claimed whereby said image processing apparatus effectively enhances said input images to produce said display images is met by col. 9, lines 37-50.

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In consider claim 2, the claimed wherein the DOP comprises a display map memory including display system manufacturing information, system configuration information, and user data for the display system is met by nonvolatile RAM 74 (col. 5, lines 42-50)

Claims 40, 48 and 49 are rejected for the same reason as discussed in claim 1.

3. Claims 33-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Szeliski et al. (US. Patent 6,044,181).

In consider claimed 33, Szeliski et al. disclose all claimed subject matter, note 1) the claimed a display device, coupled to said display system, for viewing image data is met by col. 9, lines 1-4, 2) the claimed a geometric transformation module coupled to said display system, said geometric transformation module being configured to precondition said image data with geometric transformations to thereby compensate for characteristics of said display system is met by col. 6, line 54 to col. 7, line 11.

In consider claim 34, the claimed wherein said geometric transformation module comprises a spatial transformation module for redefining spatial relationships between image pixels is met by col. 9, lines 30-57.

In consider claim 35, the claimed wherein said geometric transformation module comprises an alignment and rotation correction module for repositioning image pixels is met by col. 14, lines 46-60.

In consider claim 36, the claimed wherein said geometric transformation module comprises a focus correction module for correcting image defocus is met by col. 16, lines 24-65.

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In consider claim 37, the claimed wherein said geometric transformation module comprises a distortion correction module for correcting image distortions is met by col. 24, line 48 to col. 25, line 43.

In consider claim 38, the claimed wherein said geometric transformation module comprises a multi-frame correlation module for performing motion-compensated frame rate conversion is met by col. 26, lines 12-52.

In consider claim 39, the claimed wherein said geometric transformation module improves skew, tangential symmetry, aspect angle, and scale-related distortions of the image data is met by col. 31, line 53 to col. 32, line 42.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4-12, 14-17, 26-30, 32 and 41-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (US. Patent 5,920,688) in view of Szeliski et al. (US. Patent 6,044,181).

In consider claim 4, Cooper et al. disclose all the features of the invention as discussed in claims 1-2, 40, 48 and 49 above except for providing wherein said DOP comprises a geometric

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transformation module for geometrically transforming the image data. Szeliski et al. teaches an apparatus for construction of panoramic mosaic image having geometric transformation module for geometrically transforming the image data (col. 9, lines 9-29). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the geometric transformation module as taught in Szeliski et al. in order to construct and render panoramic mosaic images from a sequence of still images, video images or scanned photographic images (col. 1, lines 9-11 of Szeliski et al.).

In consider claim 5, the claimed wherein said geometric transformation module comprises a spatial transformation module for redefining spatial relationships between image pixels is met by col. 9, lines 30-57 of Szeliski et al.; an alignment and rotation correction module for repositioning image pixels is met by col. 14, lines 46-60 of Szeliski et al.; a focus correction module for correcting image defocus is met by col. 16, lines 24-65 of Szeliski et al.; and a distortion correction module for correcting image distortions is met by col. 24, line 48 to col. 25, line 43 of Szeliski et al..

In consider claim 6, the claimed wherein said alignment and rotation correction module can rotate images is met by col. 14, lines 46-60 of Szeliski et al..

In consider claim 7, the claimed wherein said focus correction module corrects said image defocus resulting from image deformation and from display optics is met by col. 15, line 30 to col. 16, line 65 of Szeliski et al..

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In consider claim 8, the claimed wherein said geometric transformation module improves skew, tangential symmetry, aspect angle, and scale-related distortions of the display images is met by col. 31, line 53 to col. 32, line 42 of Szeliski et al..

In consider claim 9, the claimed wherein said geometric transformation module corrects environment-introduced image artifacts is met by col. 27, lines 42-59 of Szeliski et al..

In consider claim 10, the claimed wherein said geometric transformation module correct artifacts resulting from non-uniformity of the display projection path or display screen is met by col. 27, lines 15-59 of Szeliski et al..

In consider claim 11, the claimed wherein said DOP uses a mathematical formula for altering said image data written to the display modulator to suit a panoramic projection is met by col. 27, lines 14-35 of Szeliski et al..

In consider claim 12, the claimed wherein said geometric transformation module comprises a texture mapping module for performing texture mapping is met by col. 27, lines 14-35 of Szeliski et al..

In consider claim 14, the claimed wherein said geometric transformation module comprises a multi-frame correlation module for performing motion-compensated frame rate conversion is met by col. 26, lines 12-52 of Szeliski et al..

In consider claim 15, the claimed wherein motion compensation information for performing the frame rate conversion is selected from a group including a selected display image and a motion estimator output is met by col. 9, lines 1-30 of Szeliski et al..

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In consider claim 16, the claimed wherein said geometric transformation module comprises a spatial transformation module for redefining spatial relationships between image pixels is met by col. 9, lines 30-57 of Szeliski et al..

In consider claim 17, the claimed wherein said spatial transformation module uses frame information and motion tracking information from multiple input images to increase resolution of images is met by col. 25, lines 7-54 and col.13, lines 2-17 of Szeliski et al..

In consider claim 26, the claimed wherein said DIP comprises an Image Reconstruction module for performing multiframe reconstruction to increase image resolutions is met by col. 13, lines 2-17 of Szeliski et al..

In consider claim 27, the claimed wherein said multiframe reconstruction uses motion estimation vectors from an input bitstream to correlate multiple images is met by col. 26, lines 12-52 of Szeliski et al..

In consider claim 28, the claimed wherein said motion estimation vectors are utilized or masked based on matching accuracy of motion estimation blocks associated with the motion estimation vectors is met by col. 26, lines 12-52 of Szeliski et al..

In consider claim 29, the claimed wherein said motion estimation vectors, when utilized, are further processed to discern sub-block motion estimation is met by col. 26, lines 12-52 of Szeliski et al..



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In consider claim 30, the claimed wherein said Image Reconstruction module includes motion estimation for tracking motion between the input images and providing motion tracking results through motion estimation vectors is met by col. 26, lines 12-52 of Szeliski et al..

In consider claim 32, the claimed wherein the motion estimation vectors use enhanced matching techniques including rotation, scale and sheer techniques is met by col. Col. 13, lines 2-60 and col. 14, lines 46-60 of Szeliski et al..

Claim 41 is rejected for the same reason as discuss in claim 4.

Claims 42-45 are rejected for the same reason as discuss in claim 5.

Claim 46 is rejected for the same reason as discuss in claim 14.

Claim 47 is rejected for the same reason as discuss in claim 8.

6. Claims 13 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (US. Patent 5,920,688) in view of Szeliski et al. (US. Patent 6,044,181) as applied to claim 1 above, and further in view of Kitamura et al (US. Patent 5,936,628).

In consider claim 13, the combination of Cooper et al. and Szeliski et al. discloses all the features of the instant invention except for providing where the texture mapping is used to perform transitions for multi-picture displays. Kitamura et al teach that the 3D images can be displayed on the multi-picture format (col. 7, lines 28-43). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the display unit 4 as taught by Kitamura et al into Cooper et al.'s system in order to view plurality of image on one single display unit.

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In consider claim 24, the claimed wherein said image processing apparatus simultaneously receives multiple video streams and presents said multiple video streams in a single display using Picture-in-Picture and windows controls is met by col. 7, lines 28-43 of Kitamura et al.

7. Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (US. Patent 5,920,688) in view of Szeliski et al. (US. Patent 6,044,181) as discussed in claims 1 and 17 above, and further in view of Sporer et al. (US. Patent 5,883,670).

In consider claim 18, the combination of Cooper et al. and Szeliski et al. discloses all the features of the instant invention except for providing a compressed bitstream. Sporer et al. teaches computer systems have video encoders for compressing video signal (col. 2, lines 21-26). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the MPEG and JPEG encoders into Cooper et al.'s system in order to reduce the bandwidth of the video signal and to reduce the storage capacity of Cooper et al..

In consider claim 19, the combination of Cooper et al. and Szeliski et al. discloses all the features of the instant invention except for coded bitstream. Sporer et al. teaches computer systems have video encoders for compressing video signal (col. 2, lines 21-26). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the MPEG and JPEG encoders into Cooper et al.'s system in order to reduce the bandwidth of the video signal and to reduce the storage capacity of Cooper et al..

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In consider claim 20, the claimed wherein said image object information, said image object depths, and said image motion tracking information is used to provide projection means for 3D and panoramic displays is met by col. 7, lines 1-11 and col. 9, lines 1-4 of Szeliski et al..

In consider claim 21, the claimed wherein said image processing apparatus uses said object information to reposition objects in output coordinates of a panoramic display is met by col. 11, lines 1-12 of Szeliski et al..

In consider claim 22, the combination of Cooper et al., Szeliski et al., and Sporer et al. does not specifically disclose that the modified images to a film recorder instead of a projection system. Szeliski et al. also disclose in col. 1, lines 35-37 that the panoramic image can be recorded onto a long film strip using a panoramic camera. It would have been obvious to one of ordinary skill in the art at the time of the invention to record the panoramic images of Szeliski et al. onto a long film strip for later use.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (US. Patent 5,920,688) in view of Frankenbach (US. Patent 4,894,653).

Cooper et al. disclose all the features of the instant invention except for providing wherein said system configuration information includes intensity values which can be adjusted during setup of the display system for color components of said DOP outputs. Frankenbach teaches an apparatus for generating video signals having a plurality of bit map memory arrays, the number of bit map memory arrays related to the number of variations of color intensity for

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each pixel at the display device (col. 5, lines 40-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the bit map memory arrays as taught by Frankenbach in order to increase the quality of the image to be displayed (col. 2, lines 16-18 of Frankenbach).

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (US. Patent 5,920,688) in view of Szeliski et al. (US. Patent 6,044,181) and Sporer et al. (US. Patent 5,883,670) as discussed in claim 19 above, and further in view of Aritake et al (US. Patent 5,872,590).

The combination of Cooper et al., Szeliski et al., and Sporer et al. discloses all the features of the instant invention except for providing wherein said image processing apparatus receives a coded input that represents two images and said two images are used to present a 3D stereoscopic image. Aritake et al teach an apparatus for allowing stereoscopic video image to be observed having the capability of receiving two images which present a 3D stereoscopic image (col. 16, lines 43-63). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the capability of obtain and display the 3D stereoscopic images as taught by Aritake et al in order to allow 3D stereoscopic image to be observed (col. 2, lines 59-60 of Aritake et al.).

10. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (US. Patent 5,920,688) in view of Szeliski et al. (US. Patent 6,044,181) as discussed in claim 26 above, and further in view of Aritake et al. (US. Patent 5,872,590).

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The combination of Cooper et al. and Szeliski et al. discloses all the features of the instant invention except providing wherein multiple images from multiple cameras as used to perform image reconstruction. Aritake et al teach an apparatus for allowing stereoscopic video image to be observed having the capability of receiving two images from two cameras which present a 3D stereoscopic image (col. 10, lines 57-67 and col. 16, lines 43-63). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the capability of obtain and display the 3D stereoscopic images as taught by Aritake et al in order to allow 3D stereoscopic image to be observed (col. 2, lines 59-60 of Aritake et al.).

11. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (US. Patent 5,920,688) in view of Szeliski et al.(US. Patent 6,044,181) and Kitamura et al. (US. Patent 5,936,628) as discussed in claim 24 above, and further in view of Kazami et al. (US. Patent 6,035,093).

The combination of Cooper et al., Szeliski et al., and Kitamura et al discloses all the features of the instant invention except for providing wherein said geometric transform module performs transition effects between different video streams including fades and wipes. Kazami et al. teaches an image file editing apparatus having capabilities of fades and wipes (col. 9, lines 1-6). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the editing means 4 as taught in Kazami et al. in order to increase the quality of the video signal by editing the video signal.

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*Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Urbanus et al. (US. Patent No. 5,442,411) disclose displaying video data on a spatial light modulator with line doubling.

Inoue et al. (US. Patent No. 5,832,085) disclose method and apparatus storing multiple protocol, compressed audio video data.

Bonde et al. (US. Patent No. 5,764,311) disclose image processing apparatus.

Hegg (US. Patent No. 5,748,264) discloses distortion corrected display.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trang Tran whose telephone number is (703) 305-0090. The examiner can normally be reached on Monday to Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John K. Peng, can be reached on (703)305-4702.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700.

**Any response to this action should be mailed to:**

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Commissioner of Patents and Trademarks

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**or faxed to:**

(703) 308-6306, (for formal communications intended for entry)

**Or:**

(703) 308-6296 (for informal or draft communications, please label  
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal  
Drive, Arlington, VA., Sixth Floor (Receptionist).

TT TT

April 11, 2000



JOHN K. PENG  
SUPERVISORY PATENT EXAMINER  
GROUP 2700